MSAPC ADVISORY CIRCULAR

U.S. ENVIRONMENTAL PROTECTION AGENCY

OFFICE OF AIR AND WASTE MANAGEMENT ● MOBILE SOURCE AIR POLLUTION CONTROL

SUBJECT: Alternative Service Accumulation Procedures

A. Purpose

The purpose of this Advisory Circular is to provide alternative service accumulation driving schedules for Class II and Class III motorcycles.

B. Background

1. It is the intent of the EPA that motorcycles accumulate service under conditions simulating actual use. EPA recognizes that although the U.S. maximum speed limit of 55 mph (90 km/h) may not be enforced in all States, manufacturers intending to use public streets and highways for service accumulation should not be expected to exceed prevailing speed limits. Therefore, for Class III motorcycles EPA recommends the use of an alternative driving schedule (with a maximum speed of 90 km/h) to the driving schedule specified in 40 CFR Part 86, Appendix IV.

2. EPA also recognizes the fact that countries other than the United States have instituted reduced speed limits as an energy conserving measure. In some cases, the reduced speed limits are closer to 50 mph, rather than 55 mph. The 80 km/h alternative schedule has been devised to accommodate manufacturers accumulating service on roads with a maximum speed limit of 50 mph.

3. Since Class I motorcycles are limited to a top speed of 70 km/h for service accumulation (40 CFR Part 86, Appendix IV(b)), they are not expected to exceed any highway speed limits. Class II or Class III motorcycles, however, are limited to top speeds of 90 km/h and 110 km/h respectively. Where highway speed limits are 50 mph or 55 mph, the top speeds for service accumulation schedules given in Appendix IV for Class II or Class III motorcycles would exceed the allowable limit. Therefore the alternative schedules described in this Advisory Circular are for Class II and Class III motorcycles only.

4. Manufacturers may utilize a modified durability driving schedule if approved in advance by EPA (40 CFR 86.426-78(a)).

C. Applicability

The provisions of this Advisory Circular are effective immediately and are applicable to 1978 and later model year motorcycles.

D. Service Accumulation Procedure

1. The basic driving schedule described in 40 CFR Part 86, Appendix IV(b), consists of 11 laps of a 6.0 kilometer (3.7 mile) closed course, and prescribes the driving mode and speed for each lap.

2. To conform to highway speed limits, two alternative driving schedules have been devised. The alternative schedule with a top speed of 90 km/h is to be used only for Class III motorcycles. The alternative schedule with a top speed of 80 km/h may be used for Class II or Class III motorcycles.

3. In these alternative driving schedules, the first nine laps will be driven as described in 40 CFR Part 86, Appendix IV. The tenth lap starts with a normal acceleration after the final idle on lap 9, proceeds at a constant speed of 80 km/h or 90 km/h (depending on which alternative schedule is being used) and finishes with a normal deceleration to a complete stop.

4. Lap 11 begins with a wide-open-throttle acceleration to 80 km/h or 90 km/h, as applicable, a fast deceleration to a stop, and three subsequent wide-open-throttle accelerations and fast decelerations at evenly spaced intervals in the 6.0 km lap.

E. Discussion

1. A comparison of the present 110 km/h maximum speed durability driving schedule and the alternative 80 km/h or 90 km/h schedule is shown in Attachment I. It also serves as a guide for those manufacturers who elect to use the alternative 80 km/h or 90 km/h maximum speed schedules in laying out a service accumulation route.

2. The comparison is based on assuming a uniform light acceleration rate of 4.8 km/h/sec (3 mph/sec), a uniform normal acceleration rate of 8.0 km/h/sec (5 mph/sec), and a wide-open-throttle acceleration rate of 12.0 km/h/sec (7.5 mph/sec). The rates of deceleration are also assumed to be uniform with light, normal, and fast decelerations being 9.7 km/h/sec, 16.1 km/h/sec, and 24.0 km/h/sec (6 mph/sec, 10 mph/sec, and 15 mph/sec) respectively.

3. When wide-open-throttle or fast acceleration rates might result in unsafe operation (i.e., wheelies or wheelspin), the acceleration rate may be reduced to a level which allows the vehicle to be operated in a safe mode. As a further safety consideration, a modified service accumulation procedure with reduced accelerations and lap speeds will be allowed, if approved in advance by EPA, when vehicles are operated in inclement weather.

F. Approval of Service Accumulation Procedure

1. Each application for certification must include a description of the service accumulation procedure. The regulations require that the procedure be approved or disapproved, in writing, by EPA. EPA will approve an alternative

procedure as described in this Advisory Circular for manufacturers who accumulate service on public roads, on dynamometers, or on test tracks. EPA expects that manufacturers requesting the use of an alternative schedule will usually specify the 90 km/h schedule. The 80 km/h schedule will only be approved in situations where manufacturers must accumulate service on public highways which have a maximum speed of less than 90 km/h.

2. EPA will approve procedures which have substantially the same average speed, distribution of speeds, number of stops per kilometer, and a number of accelerations per kilometer as the alternatives outlined in Attachment I.

Mobile Source Air Pollution Control

Attachment

Attachment A
Events per Kilometer

Driving Mode	Appendix IV Schedule Displacement Class I	II	III	Alternative Schedule 90 km/h Top Speed	80 km/h Top Speed
Stops	0.59	0.59	0.59	0.62	0.62
Normal Accelerations from stop	0.56	0.56	0.56	0.56	0.56
Light Decelerations to 30 km/h	0.68	0.68	0.68	0.68	0.68
Light Accelerations from 30 km/h	0.68	0.68	0.68	0.68	0.68
Wide-open-throttle accelerations and normal decelerations	0.03	0.03	0.03	0.0	0.0
Wide-open-throttle accelerations and fast decelerations	0.00	0.00	0.00	0.06	0.06
Idle Time (sec)	8.18	8.18	8.18	8.18	8.18
	Percent of Total Distance				
Speed - km/h					
45	16.8	16.8	16.8	16.8	16.8
55	23.8	23.8	23.8	23.8	23.8
65	22.0	22.0	22.0	22.0	22.0
70	24.7	7.1	7.1	7.1	7.1
80	0.0	0.0	0.0	0.0	16.7
90	0.0	17.4	8.8	16.3	0.0
110	0.0	0.0	8.4	0.0	0.0
Transient	12.7	12.9	13.1	14.0	13.6
TOTAL	100	100	100	100	100
Average speed, total distance divided by total time (including idle time)	49.4	50.8	51.7	51.2	50.1
Hours to complete test distance	201.5	289.8	483.1	485.8	Class II 300.4 Class III 500.3